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Top management team characteristics and team processes: A review

Xin Huang[†] and Koichi Nakagawa[‡]

Abstract

In a fiercely competitive market and rapidly changing business environment, it is difficult for individual leaders to scan the complex external environments and make critical decisions on the future sustainable development of the companies, hence enterprises need urgently to build effective top management teams to help them solve a number of complicated and difficult problems. On the other hand, since Hambrick and Mason (1984) put forward the upper echelons theory which marks the beginning of top management team research, many of the studies on top management teams have demonstrated that top management team characteristics and processes have significant influences on corporate strategy and performance.

This study reviews the extant literature on top management teams, especially the empirical research. This review mainly summarizes and analyzes the theoretical development related to the upper echelons, the effects of top management team characteristics on organizational outcomes, team processes and environmental influences, further synthesizes and integrates these research findings into a circle model to clarify the relationships among them, meanwhile providing some directions for future research on top management teams.

JEL classification: M540, M120

Key words: top management team, characteristics, heterogeneity, team process, upper echelons

1. Introduction

In the face of a continually changing business environment and increasingly fierce market competition, enterprises want to ensure competitive advantages and access to sustainable development, not only need to build good relationships with their stakeholders and actively engage in the product and service innovation, but also pay more attention to the organization construction, especially top management teams (TMTs) with the strategic decision-making power.

Since Hambrick and Mason put forward the “upper echelons theory” in 1984, the top management team research has become an important research focus in the fields of strategic leadership and human

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resources in the past thirty years, wherein there is widespread concern over the impacts of the top management team characteristics on organizational outcomes from a demographic perspective. For instance, TMT characteristics have influences on organizational innovation (Bantel & Jackson, 1989; Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005; Daellenbach, McCarthy & Schoenecker, 1999; Heavey & Simsek, 2013; Liu et al., 2012; Wei & Lau, 2012), strategic change (Boeker, 1997; Lant, Milliken & Batra, 1992; Wiersema & Bantel, 1992), strategic consensus (Knight et al., 1999), competitive actions (Hambrick, Cho & Chen, 1996; Srivastava & Lee, 2005), corporate internationalization (Carpenter & Fredrickson, 2001; Chen, 2011; Herrmann & Datta, 2005; Nielsen B B & Nielsen S, 2011; Tihanyi et al., 2000), organizational crisis (Greening & Johnson, 1996), team turnover (Wiersema & Bird, 1993), team performance (Boerner, Linkohr & Kiefer, 2011) and organizational performance (Auden, Shackman & Onken, 2006; Cai, Liu & Yu, 2013; Cannella, Park, & Lee, 2008; Carpenter, 2002; Halebian & Finkelstein, 1993; Kor, 2003; Liu et al., 2012; Nielsen B B & Nielsen S, 2013; Richard & Shelor, 2002; Simons, Pelled & Smith, 1999; Wei et al., 2005; Weinzimmer, 1997).

Hence, the study will summarize and analyze the existing literature on top management teams, especially the empirical research, mainly from the following four aspects: the theoretical development related to upper echelons, top management team characteristics such as TMT demographics and heterogeneities, team processes and environmental influences, further establishes a model of relationships among these variables, meanwhile offering some directions for future research on top management teams.

2. Theory

The upper echelons theory was firstly introduced in 1984 by Hambrick and Mason, as a theoretical basis of the research on top management teams it has been developed and expanded many times in the past thirty years (Abatecola, Mandarelli & Poggesi, 2013; Carpenter, Geletkanycz & Sanders, 2004; Hambrick, 2007; Jackson, 1992; Nielsen, 2010; Raes et al., 2011; Wiersema & Bird, 1993).

2-1. Upper echelons theory

A large amount of research on top management teams has sprung up since the upper echelons theory was put forward by Hambrick and Mason in 1984. On the one hand, the upper echelons theory attaches importance to the entire top management team rather than individual leaders (Hambrick & Mason, 1984). Hambrick and Mason (1984), after studying and analyzing the strategic choice model based on bounded rationality, argue that a top manager often tends to screen, filter and even distort information when confronting a highly complex environment which he/she has an inability to understand and control by means of limited cognitive base and values, which can not only lead to lack of comprehensive perception and objective judgments, but also have an unfavorable impact on the strategic decision making in an organization. Furthermore, it is impossible for a senior executive to observe and notice every aspect of the organization or environment in terms of limited energy and capability (Hambrick & Mason, 1984). Therefore, Hambrick and Mason (1984) eventually located

upper echelons theory at the level of the top management team.

On the other hand, the upper echelons theory places particular emphasis on observable characteristics (Hambrick & Mason, 1984). Top management team members have different cognitive bases, values and insights, and interactions between these traits are more likely to influence strategic choices and organizational performance, however it is difficult to measure these traits since many senior managers are reluctant to take psychological tests (Hambrick & Mason, 1984). Hence, Hambrick and Mason (1984) finally employed demographic characteristics as substitutes of these unobservable traits in order to demonstrate the effects of top management teams on organizational strategy and performance.

Taken together, as shown in the figure 1, Hambrick and Mason's (1984) upper echelons model, these demographic characteristics (e.g. age, education, function) of the top management team, instead of psychological characteristics (e.g. cognition, value), become the organizational reaction to the internal and external environment; on the other hand, these top management team characteristics are likely to affect strategic choices, and in turn organizational performance directly or indirectly. In addition, the main contributions of the upper echelons model are: 1) a prediction of organizational outcomes based on observable characteristics of the senior executives; 2) a reference for entrepreneurs or leaders in the selection and development of top-level managers; 3) a help for strategic decision makers to predict the dynamic response of their competitors. However, the upper echelons model did not take into account the influence of other variables such as mediator and moderator variables that may exist between the top management team characteristics and organizational outcomes, which may be one of the reasons for the divergence in the results of the empirical studies.

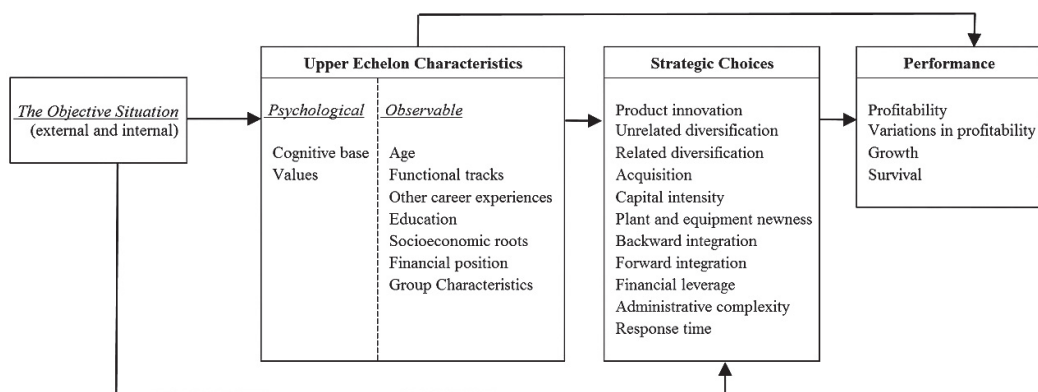


Figure 1: An Upper Echelons Perspective of Organizations (Hambrick & Mason, 1984)

2-2. Upper echelons theory development

Hambrick and Mason's (1984) upper echelons theory has a significance of the milestone in the research areas of top management teams, and after that, there has been more attention paid to this theory in academia. Some researchers have been using the upper echelons model as a research basis in their studies on top management teams, and have continually been developing and validating the

theory.

On the one hand, some scholars have been devoting themselves to developing the theoretical or conceptual extension of the upper echelons in order to expand and define the range of its application areas (Carpenter, Geletkanycz & Sanders, 2004; Hambrick, 2007; Nielsen, 2010; Wiersema & Bird, 1993). Wiersema and Bird (1993) developed a cross-national model and introduced the ethnological context such as socio-cultural values that affected the tolerance of differences and in turn mediated the impacts of the demographic characteristics of top management teams on organizational outcomes, for instance, the top management teams have lower tolerance towards heterogeneity in Japanese companies than in American companies since the oriental culture advocates collectivistic values. Carpenter, Geletkanycz and Sanders (2004) extended the upper echelons theory and established the second generation model of the upper echelons, specially, they not only drew behaviors, cognitions and some intervening variables (e.g. team process, integration, incentive, power and discretion) into the upper echelons framework, but also identified the main antecedents of the top management team constitution that included external environment (e.g. stakeholder, labor market) and organizational characteristics (e.g. firm and board characteristics). Hambrick (2007) refined his own upper echelons theory mainly from the following two aspects: 1) enhanced two primary moderator variables including executive job demands and managerial discretion; 2) elaborated two fundamental concepts encompassing behavioral integration and power distribution of the top management team. Nielsen (2010) reviewed previous empirical literature on top management team heterogeneity from two aspects of concept and methodology, and she not only stressed the importance of TMT diversity to upper echelons study, but also referred to the necessity of researching antecedents of top management team constitution.

On the other hand, other researchers have been attempting opening the “black box” that existed in the original theory so as to reveal decision-making processes of the top management teams (Abatecola, Mandarelli & Poggesi, 2013; Jackson, 1992; Raes et al., 2011). Jackson (1992) made a supplement with the strategic issue processing (e.g. conflict, commitment, decision quality and speed) to open the “black box” that existed in the upper echelons theory and paid more attention to the particulars of the processes, for example what kind of team constitution (e.g. homogeneous team, heterogeneous team) can affect organizational outcomes. Raes et al. (2011) created an interaction processes model of the top management team and middle managers to give a new explanation of how top management teams affect organizational outcomes. Abatecola, Mandarelli and Poggesi (2013) employed the framework of the five-factor model to systematically review the related studies about the effect of the personality of top management team members on managerial outcomes of companies, and they explained how top management teams make strategic decisions from a psychological perspective in order to attempt to open the “black box” existing in the upper echelons theory through analyzing the TMT personality.

3. Top management team characteristics

A top management team is constituted by the most powerful and influential senior executives who can not only create organizational mission and vision, but also take responsibility for strategic

decision making. The constitution and membership of top management team are often defined or identified mainly through two approaches: 1) to ask chief executive officer/general manager about who are directly involved in major strategy decisions making (Amason, 1996; Amason & Mooney, 1999; Amason & Sapienza, 1997; Heavey & Simsek, 2013; Knight et al., 1999; Ou et al., 2014; Simons, Pelled & Smith, 1999; Simons & Peterson, 2000; Wei & Lau, 2012); 2) to verify top-level managers' titles and positions in an organization (Carpenter, 2002; Carpenter & Fredrickson, 2001; Chen, 2011; Hambrick, Cho & Chen, 1996; Herrmann & Datta, 2005; Kor, 2003; Murray, 1989; Nielsen B B & Nielsen S, 2011; Tihanyi et al., 2000). Hence, most of the empirical studies on top management teams identify TMT members and gather related information by means of interview (Amason, 1996; Boeker, 1997; Heavey & Simsek, 2013; Knight et al., 1999; Simons & Peterson, 2000; Wei & Lau, 2012), questionnaire (Amason & Mooney, 1999; Camelo-Ordaz, García-Cruz & Sousa-Ginel, 2014; Raes, Bruch & De Jong, 2013; Simons, Pelled & Smith, 1999) and corporate publications such as annual reports and prospectuses (Carpenter & Fredrickson, 2001; Hambrick, Cho & Chen, 1996; Kor, 2003; Liu et al., 2012; Murray, 1989; Nielsen B B & Nielsen S, 2011, 2013; Tihanyi et al., 2000). Meanwhile, the research on top management team characteristics mostly focuses on some measurable demographics and their heterogeneities.

Top management team demographics mainly encompass TMT age, tenure, educational level, educational specialty and functional background, and based on the upper echelons theory, these demographics can take the place of the psychological characteristics such as value and cognition to reflect the social and organizational environments (Hambrick & Mason, 1984), further have effects on organizational strategies (Bantel & Jackson, 1989; Boeker, 1997; Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005; Carpenter & Fredrickson, 2001; Chen, 2011; Daellenbach, McCarthy & Schoenecker, 1999; Flood et al., 1997; Gannon, Smith & Grimm, 1992; Hambrick, Cho & Chen, 1996; Herrmann & Datta, 2005; Kimberly & Evanisko, 1981; Lee & Park, 2006; Sambharya, 1996; Srivastava & Lee, 2005; Tihanyi et al., 2000; Wiersema & Bantel, 1992) and performance (Hambrick & D'Aveni, 1992; Hutzschenreuter & Horstkotte, 2013a; Liu et al., 2012; Mayr, 2011; Pegels & Yang, 2000; Shipilov & Danis, 2006; Wei et al., 2005).

Top management team heterogeneity or diversity represents the degree of difference in characteristics of team members, mainly including age, tenure, function, educational level and specialty, and can be categorized based on visibility and work-relatedness, for instance, age heterogeneity is visible heterogeneity, while tenure, education and function heterogeneity belongs to work-related heterogeneity (Pelled, 1996). Many of the studies indicate that top management team heterogeneity can facilitate strategic decision making and corporate performance (Carpenter, 2002; Tihanyi et al., 2000; Wiersema & Bantel, 1992), yet it is found to have opposite impacts on organizational outcomes through its effects on team processes such as communication and conflicts, which is regarded as the double-edged sword effect of heterogeneity (Ancona & Caldwell, 1992; Milliken & Martins, 1996; Williams & O'Reilly, 1998).

On the one hand, from the perspective of information and decision-making theory, the heterogeneity can not only provide top management teams with a board variety of knowledge and information

(Tihanyi et al., 2000), but also bring a wide range of different viewpoints and perspectives to companies (Wiersema & Bantel, 1992), which is likely to conduce to generate strategic alternatives and thereby beneficial to the evaluation of corporate strategies (Carpenter, 2002), in turn firm innovation (Wei & Lau, 2012) and performance (Weinzimmer, 1997), furthermore, with increasing heterogeneity of top management team corporate innovation activities are more conducive to improve company performance (Lyon & Ferrier, 2002).

On the other hand, from the perspective of social categorization theory, individuals often compare themselves with others and then classify themselves into some social categories by such significant characteristics as gender, race, age, status, or organizational membership (Williams & O'Reilly, 1998). Furthermore, individuals usually have a more favorable impression on these people belonging to ingroup and may regard others in outgroup as flawed persons (Tajfel, 1982), which is likely to lead to intergroup biases (Van Knippenberg, De Dreu & Homan, 2004) and conflicts (Pelled, Eisenhardt & Xin, 1999), hinder communication and cooperation within team (Chatman & Flynn, 2001), destroy team cohesion, reduce members' satisfaction (Williams & O'Reilly, 1998). Therefore, based on social categorization theory, the top management team heterogeneity is prone to triggering conflicts between sub-groups in a team, and thereby impeding the cooperation within team and the frequency of internal communication among team members, in turn, has a negative impact on the organizational performance (Li & Hambrick, 2005; Smith et al., 1994).

3-1. TMT age

Many of the studies on top management team age (refer to Table 1) mainly focus on the effect of team average age on both strategic decisions (Bantel & Jackson, 1989; Chen, 2011; Flood et al., 1997; Herrmann & Datta, 2005; Tihanyi et al., 2000; Wiersema & Bantel, 1992) and organizational performance (Hutzschenreuter & Horstkotte, 2013a; Liu et al., 2012; Mayr, 2011; Pegels & Yang, 2000; Wei et al., 2005).

Top management team age is found to influence team decision making (Taylor, 1975), older executives, specifically speaking, tend to collect more information from wider perspectives in order to make more prudent considerations in corporate strategies (Taylor & Dunnette, 1974), thus, these companies with older managers are more likely to sustain risk and take pioneering actions (Flood et al., 1997). In contrast, younger executives are not only eager to alter corporate strategies (Grimm & Smith, 1991; Wiersema & Bantel, 1992), but also able to find the value hidden in risk and are more willing to take risk (Vroom & Pahl, 1971), in turn boost investment in research and development of corporations (Barker & Mueller, 2002), hence, younger top management teams are more inclined to engage in innovation (Bantel & Jackson, 1989) and thereby improve innovation performance (Liu et al., 2012). Furthermore, the younger the executives are, the more confident they are in corporate operation and management, the more international the firm decisions are (Chen, 2011; Herrmann & Datta, 2005; Tihanyi et al., 2000).

Additionally, top management team age also affects organizational performance (Hutzschenreuter & Horstkotte, 2013a; Mayr, 2011; Wei et al., 2005). Some of the studies find that younger executives

are more beneficial to firm growth and performance (Child, 1974; Hart & Mellons, 1970; Pegels & Yang, 2000), since top management teams with more young members have capabilities of generating strategic assets (e.g. reputation, productivity, operational efficiency) (Pegels & Yang, 2000), whereas recent research findings confirm that top management team age is positively (Wei et al., 2005) or less related to firm performance (Hutzschenreuter & Horstkotte, 2013a), alternatively, there is a U-shaped relationship between top management team age and corporate performance (Mayr, 2011).

3-2. TMT age heterogeneity

Age heterogeneity (refer to Table 1) of top management team tends to positively affect corporate strategies (Bantel & Jackson, 1989; Tihanyi et al., 2000; Wei & Lau, 2012; Wiersema & Bantel, 1992), while it exerts different impacts on organizational outcomes (Boerner, Linkohr & Kiefer, 2011; Richard & Shelor, 2002; Simons, Pelled & Smith, 1999; Wiersema & Bird, 1993).

TMT age heterogeneity has a noteworthy impact on corporate strategy decisions. Team members with different age are likely to experience different events and circumstances, which can influence and shape their values, attitudes and perspectives to a great extent and further facilitates innovation (Bantel & Jackson, 1989; Wei & Lau, 2012). Furthermore, the age heterogeneity is conducive to communicate and share various thoughts and opinions among team members and thereby accept strategic change, especially in complex environment (Tihanyi et al., 2000; Wiersema & Bantel, 1992). Hence, TMT age heterogeneity is beneficial in corporate performance, especially in short-term performance (Boerner, Linkohr & Kiefer, 2011).

Table 1 Age

TMT Characteristics	Effect	Firm outcomes	Literature
Average age	Positive	Pioneering actions	Flood et al., 1997
	Positive	Performance	Pegels & Yang, 2000 Wei et al., 2005
	Negative	Strategic change	Grimm & Smith, 1991 Wiersema & Bantel, 1992
	Negative	Innovation	Bantel & Jackson, 1989 Liu et al., 2012
	Negative	Internationalization	Chen, 2011 Herrmann & Datta, 2005 Tihanyi et al., 2000
	U-shaped	Performance	Mayr, 2011
	No	Performance	Hutzschenreuter & Horstkotte, 2013a
Age heterogeneity	Positive	Strategic change	Tihanyi et al., 2000 Wiersema & Bantel, 1992
	Positive	Innovation	Bantel & Jackson, 1989 Wei & Lau, 2012
	Positive	Team turnover	Wiersema & Bird, 1993
	Positive	Performance	Boerner, Linkohr & Kiefer, 2011
	Negative	Performance	Simons, Pelled & Smith, 1999
	U-shaped	Performance	Richard & Shelor, 2002

On the other hand, age heterogeneity may negatively affect cohesion and integration of the top management team and thereby be prone to a high turnover rate of teams (O'Reilly, Caldwell & Barnett, 1989; Wiersema & Bird, 1993). It is also confirmed that age heterogeneity negatively influences firm performance (Simons, Pelled & Smith, 1999).

Additionally, some research finds that there is a U-shaped relationship between age heterogeneity of top management team and company performance, specifically speaking, age heterogeneity has a positive effect on firm performance at lower level while is negatively associated with organizational performance at higher level (Richard & Shelor, 2002).

3-3. TMT tenure

Top management team tenure (refer to Table 2) is verified to have a salient impact on strategic decisions in turn corporate performance (Bantel, 1993b; Boeker, 1997; Carpenter & Fredrickson, 2001; Finkelstein & Hambrick, 1990; Hambrick & D'Aveni, 1992; Keck, 1997; Lee & Park, 2006; Liu et al., 2012; Michel & Hambrick, 1992; Nielsen B B & Nielsen S, 2013; Srivastava & Lee, 2005; Sutcliffe, 1994; Tihanyi et al., 2000; Wiersema & Bantel, 1992).

On the one hand, the executives in top management teams with longer tenure may not only have a common perception about the process of corporate strategic decision making (Iaquinto & Fredrickson, 1997) and firm-wide knowledge in order to facilitate team coordination and cohesion (Michel & Hambrick, 1992; Priem, Lyon & Dess, 1999), but are also willing to communicate and share these knowledge with each other, especially noteworthy information, which is beneficial to perceive the environment more accurately (Sutcliffe, 1994), for instance, long-tenured top management teams stress the importance of corporate internationalization since they can find more opportunities (Carpenter & Fredrickson, 2001; Tihanyi et al., 2000); in contrast, short-tenured top management teams are likely to have many deficiencies owing to a lack of team cohesion, which leads to strategic mistakes and corporate decline (Hambrick & D'Aveni, 1992), although these teams are prone to make a formal strategic plan (Bantel, 1993b). Moreover, it is confirmed that TMT firm tenure has a negative impact on strategic conformity (Geletkanycz & Hambrick, 1997). Additionally, in these companies with long-tenured top management teams TMT heterogeneity (e.g. nationality) positively affects corporate performance, since longer tenure can decrease the affective conflict and the adverse effect of team dynamics (Nielsen B B & Nielsen S, 2013).

On the other hand, longer tenure tends to keep membership stable and leads team members to deem that they are able to anticipate others' thoughts and opinions, which is not conducive to communication and interaction among both team members and groups, in turn, negatively influences team performance (Katz, 1982), firm growth (Keck, 1997) and innovation performance as a result of the knowledge deficit related to further development of firms (Liu et al., 2012). Furthermore, long-tenured top management teams are resistant to making strategic change (Boeker, 1997; Wiersema & Bantel, 1992) and engaging in illegal actions (Daboub et al., 1995), in other words, these teams with longer tenure are inclined to maintain the strategic persistence and conformity in order to promote these companies perform consistently with industrial standard (Finkelstein & Hambrick, 1990),

thereby companies with these top management teams are reluctant to participate in international alliances (Lee & Park, 2006). Additionally, top management team tenure has a negative impact on corporate entrepreneurship in personal computer industry, while there is a positive effect of TMT tenure on entrepreneurial actions in both telecommunication and brewing industry (Srivastava & Lee, 2005); however, some of the studies indicate that TMT tenure has less influence on corporate innovation (Daellenbach, McCarthy & Schoenecker, 1999) and team processes (e.g. communication, integration) (Smith et al., 1994).

3-4. TMT tenure heterogeneity

Tenure heterogeneity (refer to Table 2) of top management team has favorable effects on corporate strategic choices such as innovation, internationalization and competitive actions (Carpenter & Fredrickson, 2001; Hambrick, Cho & Chen, 1996; Heavey & Simsek, 2013; Nielsen B B & Nielsen S, 2011; Srivastava & Lee, 2005; Tihanyi et al., 2000; Wei & Lau, 2012; Wiersema & Bantel, 1992), while there is a contentious relationship between TMT tenure heterogeneity and organizational performance (Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005; Carpenter, 2002; Greening & Johnson, 1996; Halebian & Finkelstein, 1993; Kor, 2003; Smith et al., 1994).

Tenure heterogeneity can not only bring top management teams a variety of different opinions to stimulate strategic change of firms (Boeker, 1997; Wiersema & Bantel, 1992) and organizational innovation (Heavey & Simsek, 2013; Wei & Lau, 2012), but also help companies avoid disasters or crises, since it is conducive to predict, analyze and solve potential problems from different perspectives, which in turn efficiently improve the quality of decision making (Greening & Johnson, 1996) and internal team process, thereby may facilitate team performance (Ancona & Caldwell, 1992) and firm growth (Hambrick, Cho & Chen, 1996). Furthermore, tenure heterogeneity is positively associated with competitive actions (e.g. new product introduction), and thus top management teams with greater heterogeneity in tenure are more likely to take initiate actions as first movers rather than imitators (Hambrick, Cho & Chen, 1996; Srivastava & Lee, 2005). Additionally, TMT tenure heterogeneity is found to have a favorable impact on corporate internationalization (Carpenter & Fredrickson, 2001; Nielsen B B & Nielsen S, 2011; Tihanyi et al., 2000).

In contrast, tenure heterogeneity is likely to induce emotional conflict in decision making (Pelled, Eisenhardt & Xin, 1999) and impede communication among team members owing to lack of shared experience and language in an organization, which not only has a negative impact on team integration (O'Reilly, Caldwell & Barnett, 1989) and innovative performance (Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005), but also increases turnover of top management team (Wiersema & Bird, 1993), in turn has a detrimental effect on corporate performance (Halebian & Finkelstein, 1993; Smith et al., 1994), especially when companies are confronted with a complex environment (e.g. internationalization) (Carpenter, 2002). However, some research shows that there is no relationship between TMT tenure heterogeneity and firm growth (Kor, 2003).

Table 2 Tenure

TMT Characteristics	Effect	Firm outcomes	Literature
Average tenure	Positive	Internationalization	Carpenter & Fredrickson, 2001 Tihanyi et al., 2000
	Negative	International alliances	Lee & Park, 2006
	Negative	Formal strategic plan	Bantel, 1993b
	Negative	Strategic change	Boeker, 1997 Finkelstein & Hambrick, 1990 Wiersema & Bantel, 1992
	Negative	Corporate decline	Hambrick & D'Aveni, 1992
	Negative	Firm growth	Keck, 1997
	Negative	Innovation performance	Liu et al., 2012
	Opposing	Entrepreneurship in different industries	Srivastava & Lee, 2005
	Moderating	TMT heterogeneity and firm performance	Nielsen B B & Nielsen S, 2013
	No	Innovation	Daellenbach, McCarthy & Schoenecker, 1999
	No	Team processes	Smith et al., 1994
Tenure heterogeneity	Positive	Strategic change	Boeker, 1997 Wiersema & Bantel, 1992
	Positive	Innovation	Heavey & Simsek, 2013 Wei & Lau, 2012
	Positive	Avoid crisis	Greening & Johnson, 1996
	Positive	Competitive actions	Hambrick, Cho & Chen, 1996 Srivastava & Lee, 2005
	Positive	Internationalization	Carpenter & Fredrickson, 2001 Nielsen B B & Nielsen S, 2011 Tihanyi et al., 2000
	Positive	Team turnover	Wiersema & Bird, 1993
	Negative	Innovation	Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005
	Negative	Performance	Carpenter, 2002 Haleblian & Finkelstein, 1993 Smith et al., 1994
	No	Firm growth	Kor, 2003

3-5. TMT educational level

Most of the studies on top management team educational level (refer to Table 3) concentrate upon its effects on corporate innovation (Bantel & Jackson, 1989; Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005; Daellenbach, McCarthy & Schoenecker, 1999; Flood et al., 1997; Kimberly & Evanisko, 1981) and strategic change (Gannon, Smith & Grimm, 1992; Hambrick, Cho & Chen, 1996; Tihanyi et al., 2000; Wiersema & Bantel, 1992).

Educational level can reflect managers' cognitive abilities (Hitt & tyler, 1991) and high-educated managers are more likely to make different managerial decisions (Hitt & Barr, 1989), which is conducive to promoting innovation (Hambrick & Mason, 1984). Furthermore, top managers who

are highly educated have positive attitudes towards corporate innovation in virtue of their abilities of solving complicated problems, thus they are more willing to engage in organizational innovation (e.g. technological and administrative innovation) (Bantel & Jackson, 1989; Kimberly & Evanisko, 1981). Top management team educational level is also proved to positively and directly affect corporate innovative performance (Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005). In contrast, TMT educational level is negatively associated with firm pioneering behaviors, since pioneering companies require fast information processing and decision making which is more appropriate for less educated top executives rather than high-educated managers (Flood et al., 1997). However, some empirical research finds that there is no relationship between TMT educational level and innovation (Daellenbach, McCarthy & Schoenecker, 1999).

On the other hand, top management teams with high-educated executives are not only willing to be first movers (Gannon, Smith & Grimm, 1992) and adept at predicting competitors' moves in order to take competitive actions aggressively and contribute to firm growth and performance (Hambrick, Cho & Chen, 1996), but also have ability to perceive the potential opportunities brought by globalization so as to be actively involved in corporate international activities (Tihanyi et al., 2000). Furthermore, it is confirmed that TMT educational level has a positive impact on strategic change for company, since high-educated managers are able to perceive the necessity of strategic adjustment (Wiersema & Bantel, 1992), which in turn can help firms effectively avoid risks (Greening & Johnson, 1996). Additionally, top management teams with high-educated members are likely to have more bridging social capital, which is beneficial for companies to find new business opportunities and in turn improve organizational performance (Shipilov & Danis, 2006).

3-6. TMT educational level heterogeneity

Educational level heterogeneity (refer to Table 3) of top management team exerts opposing impacts on both corporate strategic decision making (Knight et al., 1999; Simons, Pelled & Smith, 1999; Wei & Lau, 2012) and firm performance (Smith et al., 1994; Wei et al., 2005).

TMT heterogeneity in educational level is prone to emotional conflict and thereby increasing the difficulty of reaching an agreement, which in turn hampers strategic consensus (Knight et al., 1999), hence TMT educational level heterogeneity may exert a detrimental impact on firm performance, especially in China since Chinese culture underscores deference and harmony and thereby it is more difficult to obtain benefits from heterogeneity of top management team (Wei et al., 2005).

However, TMT educational level heterogeneity is found to have a direct positive effect on corporate innovation (Wei & Lau, 2012) and firm performance, since companies facing a high-velocity environment have a strong desire for innovation and thereby neutralize the unfavorable effect of diverse educational levels (Smith et al., 1994). Additionally, it is confirmed that the heterogeneity in educational level exerts an unfavorable effect on decision comprehensiveness, whereas positively influences firm performance under the circumstance of great debates within top management team since debates can trigger a variety of experienced voices in order to prompt team members to actively participate in discussions of a decision (Simons, Pelled & Smith, 1999).

Table 3 Educational level

TMT Characteristics	Effect	Firm outcomes	Literature
Average educational level	Positive	Strategic change	Wiersema & Bantel, 1992
	Positive	Innovation	Bantel & Jackson, 1989 Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005
	Positive	Internationalization	Tihanyi et al., 2000
	Positive	Competitive actions	Gannon, Smith & Grimm, 1992 Hambrick, Cho & Chen, 1996
	Positive	Performance	Shipilov & Danis, 2006
	Negative	Pioneering actions	Flood et al., 1997
	No	Innovation	Daellenbach, McCarthy & Schoenecker, 1999
Educational level heterogeneity	Positive	Innovation	Wei & Lau, 2012
	Positive	Performance	Smith et al., 1994
	Positive	Performance under great debates	Simons, Pelled & Smith, 1999
	Negative	Decision comprehensiveness	Simons, Pelled & Smith, 1999
	Negative	Strategic consensus	Knight et al., 1999
	Negative	Performance	Wei et al., 2005

3-7. TMT educational specialty

Educational specialty background (refer to Table 4) of the top management team is associated with corporate strategic choice and organizational performance (Grimm & Smith, 1991; Hambrick & Mason, 1984; Shipilov & Danis, 2006; Wiersema & Bantel, 1992).

Formal education individuals received can reflect their cognitive types and values, for instance, compared with managers getting education in business or arts, these executives who received engineering education obviously have cognitive difference in decision making (Hambrick & Mason, 1984), and it is confirmed that top managers' educational specialties affect their strategic choices in assessing acquisition targets (Hitt & Tyler, 1991).

Top executives who got education in science or engineering pay more attention to process improvement and product innovation, and they are not only more likely to change corporate strategies (Wiersema & Bantel, 1992), but also willing to increase investment in research and development, while those with legal degree take no account of product development (Barker & Mueller, 2002). Additionally, it is found that top managers with MBA degrees are inclined to alter organizational strategies, since they have abilities to comprehensively analyze the internal and external business environment and adjust firm strategies in time (Grimm & Smith, 1991), furthermore, these top management teams comprised of executives who received socioeconomic education hold more social capital and perform better in companies (Shipilov & Danis, 2006).

3-8. TMT educational specialty heterogeneity

Educational specialty heterogeneity (refer to Table 4) of top management team is positively associated with organizational strategies such as innovation, globalization, competitive actions, strategic change (Bantel & Jackson, 1989; Carpenter & Fredrickson, 2001; Hambrick, Cho & Chen, 1996; Wiersema & Bantel, 1992), yet there is a controversial relationship between TMT educational specialty heterogeneity and corporate performance (Amason, Shrader & Thompson, 2006; Auden, Shackman & Onken, 2006; Carpenter, 2002).

Educational specialty heterogeneity facilitates strategic decision making (Bantel, 1993a) since it can provide top management teams with a wide-ranging and diversity of perspectives, which is beneficial to consider and solve some complex problems specially under the international circumstances (Tihanyi et al., 2000), in turn promotes organizational innovation (Bantel & Jackson, 1989), strategic change (Wiersema & Bantel, 1992) and corporate globalization (Carpenter & Fredrickson, 2001). Furthermore, top management teams with greater heterogeneity in educational specialty are more inclined to undertake initiatives in competitive moves, and companies with these top management teams perform better in both profits and market share (Hambrick, Cho & Chen, 1996). Additionally, it is confirmed that TMT educational specialty heterogeneity exerts a favorable effect on firm performance especially when companies are confronted with many internationalization decisions (Carpenter, 2002; Nielsen B B & Nielsen S, 2011).

In contrast, the top management team heterogeneity in educational specialty is found to negatively influence new venture performance when these new ventures are at a high level of novelty, since the educational specialty heterogeneity is likely to hamper behavioral integration within top management

Table 4 Educational specialty

TMT Characteristics	Effect	Firm outcomes	Literature
Science or engineering education	Positive	Strategic change	Wiersema & Bantel, 1992
	Positive	Innovation	Barker & Mueller, 2002
Socioeconomic education	Positive	Social capital Performance	Shipilov & Danis, 2006
MBA degrees	Positive	Strategic change	Grimm & Smith, 1991
Legal degrees	Negative	Product development	Barker & Mueller, 2002
Educational specialty heterogeneity	Positive	Strategic change	Wiersema & Bantel, 1992
	Positive	Innovation	Bantel & Jackson, 1989
	Positive	Globalization	Carpenter & Fredrickson, 2001
	Positive	Competitive actions Performance	Hambrick, Cho & Chen, 1996
	Positive	Performance under internationalization	Carpenter, 2002 Nielsen B B & Nielsen S, 2011
	Negative	New venture performance	Amason, Shrader & Thompson, 2006
	No	Performance	Auden, Shackman & Onken, 2006
	No	International expansion strategies	Nielsen B B & Nielsen S, 2011

teams (Amason, Shrader & Tompson, 2006). However, some research shows that TMT educational specialty heterogeneity is less related to corporate performance (Auden, Shackman & Onken, 2006) and international expansion strategies (Nielsen B B & Nielsen S, 2011).

3-9. TMT functional background

Functional background (refer to Table 5) of top management team is related to corporate decision making, especially in competition, internationalization and diversification, in turn firm performance (Carpenter & Fredrickson, 2001; Finkelstein, 1992; Gannon, Smith & Grimm, 1992; Govindarajan, 1989; Hambrick & D'Aveni, 1992; Hambrick & Mason, 1984; Michel & Hambrick, 1992; Sambharya, 1996; Tihanyi et al., 2000).

Functional background of top executives may influence their cognitive model, in turn strategic decisions, especially in acquisition appraisals of target corporations (Hitt & Tyler, 1991). Top managers who obtained career experience in marketing, engineering or research and development are inclined to attach importance to investment in product development, while those with such career experience as legal, production or operation are reluctant to spend too much on research and development (Barker & Mueller, 2002), and those with finance-functional background are more likely to pay close attention to corporate acquisition and diversification since they are adept at establishing an appropriate capital structure to achieve a better financial synergy (Finkelstein, 1992), while top managers with such experience as law, marketing, finance and general management are more likely to have the commitment to extant strategies (Geletkanycz & Black, 2001).

Furthermore, top managers' functional background is also associated with the corporate competitive strategy, for instance, executives with manufacturing, research and development experience are beneficial to performance and effectiveness of implementing a competitive strategy, while top managers who have experience in accounting and finance negatively influence performance (Govindarajan, 1989). However, the longer the top management teams take to have experience in a specific industry, the more unwilling they are to make the first move, which leads these firms to lose opportunities of establishing competitive advantages (Gannon, Smith & Grimm, 1992). Additionally, top management teams with greater international experience are inclined to encourage companies to promote the internationalization (Carpenter & Fredrickson, 2001; Sambharya, 1996; Tihanyi et al., 2000).

In highly interdependent companies, top management teams are comprised of more executives who have such functional careers such as marketing and sales, research and development, production and operation, since they are required to make strategic decisions in market and product development; in unrelated or diversified firms, top management teams are likely to need members with such functional experience as law, finance and accounting (Michel & Hambrick, 1992), although such career experience is not part of corporate critical activities (Hambrick & Mason, 1984). Furthermore, it is confirmed that top management team depravation is likely to induce firm deterioration, specially speaking, there are fewer top management team members with such functional careers as research and development, marketing and sales, production and operation in bankrupt enterprises than those

in survivor companies, whereas these core functions are essential for healthy corporations since they cover the entire process of product from design to sale (Hambrick & D'Aveni, 1992).

3-10. TMT functional background heterogeneity

Top management team heterogeneity in functional background (refer to Table 5) reveals opposing influences not only on corporate strategic choices (Bantel & Jackson, 1989; Carpenter & Fredrickson, 2001; Hambrick, Cho & Chen, 1996; Knight et al., 1999; Liu et al., 2012; Nielsen B B & Nielsen S, 2011), but also on organizational performance (Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005; Cannella, Park, & Lee, 2008; Carpenter, 2002; Greening & Johnson, 1996; Haleblan & Finkelstein, 1993; Keck, 1997; Nielsen B B & Nielsen S, 2013; Simons, Pelled & Smith, 1999; Wei et al., 2005; Weinzimmer, 1997).

Functional background heterogeneity is likely to drive cognitive conflict (Cai, Liu & Yu, 2013) that has more favorable effects on cognitive task performance than emotional conflict (Pelled, Eisenhardt & Xin, 1999), and it also facilitates the generation of alternative solutions, which is beneficial for top management teams to solve some complex issues, thereby accelerating organizational innovation (Bantel & Jackson, 1989; Liu et al., 2012) and strategic reorientation (Lant, Milliken & Batra, 1992), further avoiding potential crises (Greening & Johnson, 1996), meanwhile functional heterogeneity is negatively associated with commitment to existing corporate strategies (Geletkanycz & Black, 2001). Furthermore, TMT functional heterogeneity is positively associated not only with strategic decision making (Bantel, 1993a) such as corporate competitive actions (Hambrick, Cho & Chen, 1996) and international expansion decisions (Nielsen B B & Nielsen S, 2011), but also with organizational performance (Nielsen B B & Nielsen S, 2013; Wei et al., 2005) in both small and large companies (Weinzimmer, 1997), especially when most of the top management team members work at the same location (Cannella, Park, & Lee, 2008) and under the turbulent environment (Keck, 1997). Additionally, some empirical research indicates that there is no direct relationship between TMT functional heterogeneity and firm performance such as financial and growth performance (Cai, Liu & Yu, 2013), whereas a positive relationship between TMT functional background heterogeneity and corporate innovative performance appears when strategic consensus on innovation is reached within top management teams (Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005).

On the other hand, the functional heterogeneity is not only prone to induce affective conflict (Cai, Liu & Yu, 2013) and further interfere with agreement seeking and strategic consensus (Knight et al., 1999), but also aggravates the problem of stereotypes that is caused by ingroup-outgroup prejudice, which inhibits team cohesion and communication among team members, in turn impedes information sharing, unit performance (Bundersonm & Sutcliffe, 2002) and even firm internationalization specially under the uncertain environment (Carpenter & Fredrickson, 2001). Furthermore, it is confirmed that there is a negative relationship between functional background heterogeneity and firm performance (Haleblan & Finkelstein, 1993; Simons, Pelled & Smith, 1999), especially in companies with a higher degree of internationalization (Carpenter, 2002). Additionally, although functional heterogeneity can promote external communication that conduces to innovation, it is harmful to team performance

(Ancona & Caldwell, 1992) and environmental perceptions (Sutcliffe, 1994).

Table 5 Functional background

TMT Characteristics	Effect	Firm outcomes	Literature
Manufacturing or R&D function	Positive	Competitive strategy Performance	Govindarajan, 1989
Marketing, engineering or R&D function	Positive	Product development	Barker & Mueller, 2002
Law, accounting or finance function	Positive	Diversification	Finkelstein, 1992 Michel & Hambrick, 1992
Law, marketing, finance or general management function	Positive	Commitment to extant strategies	Geletkanycz & Black, 2001
International function	Positive	Internationalization	Carpenter & Fredrickson, 2001 Sambharya, 1996 Tihanyi et al., 2000
Legal, production or operation function	Negative	Innovation	Barker & Mueller, 2002
Accounting or finance function	Negative	Performance	Govindarajan, 1989
R&D, marketing and sales, production and operation function	Negative	Firm deterioration	Hambrick & D'Aveni, 1992
Functional background heterogeneity	Positive	Strategic reorientation	Lant, Milliken & Batra, 1992
	Positive	Innovation	Bantel & Jackson, 1989 Camelo-Ordaz, Hernández-Lara & Valle-Cabrera, 2005 Liu et al., 2012
	Positive	Avoid potential crisis	Greening & Johnson, 1996
	Positive	Competitive actions	Hambrick, Cho & Chen, 1996
	Positive	International expansion decisions	Nielsen B B & Nielsen S, 2011
	Positive	Cognitive conflict Affective conflict	Cai, Liu & Yu, 2013
	Positive	Performance	Cannella, Park, & Lee, 2008 Keck, 1997 Nielsen B B & Nielsen S, 2013 Wei et al., 2005 Weinzimmer, 1997
	Negative	Commitment to existing strategies	Geletkanycz & Black, 2001
	Negative	Strategic consensus	Knight et al., 1999
	Negative	Internationalization	Carpenter & Fredrickson, 2001
	Negative	Environmental perceptions	Sutcliffe, 1994
	Negative	Performance	Carpenter, 2002 Haleblian & Finkelstein, 1993 Simons, Pelled & Smith, 1999
	No	Performance	Cai, Liu & Yu, 2013

4. Top management team processes

Top management team processes have significant influences on organizational outcomes (Carmeli & Schaubroeck, 2006; Carmeli, Schaubroeck & Tishler, 2011; Hambrick, 1997; Lubatkin et al., 2006; Ou et al., 2014; Raes, Bruch & De Jong, 2013), and meanwhile there is the two-way causality between top management team composition and team processes (Eisenhardt & Schoonhoven, 1990; Ensley, Pearson & Amason, 2002; Finkelstein, 1992; Knight et al., 1999; Pelled, 1996; Simsek et al., 2005; Smith et al., 1994). Antecedents and consequences of team processes will be summarized and analyzed through the five following process factors: leadership, cohesion, conflict, communication and integration.

4-1. Leadership

Most of the recent studies on top management team leadership (refer to Table 6) lay stress on the impact of different leader's personalities (De Hoogh & Den Hartog, 2008; Ou et al., 2014; Peterson et al., 2003) and leadership styles (Carmeli, Schaubroeck & Tishler, 2011; Ensley, Pearson & Pearce, 2003; Flood et al., 2000) on team and corporation.

Chief executive officer, as a core of top management team, affects team composition and performance tremendously (Finkelstein, 1992). Besides, CEO always holds most power in a top management team, and the more unequal the power distribution within the team is, the greater the corporate performance is; in other words when CEO is more powerful than other team members, the top management team operates more effectively and creates better performance for the company (Smith et al., 2006).

Leader is, as an intermediary between the team and external environment, essential to a team, and responsible for coordinating individual goals with team goal, so that the team gains higher cohesion and efficiency (Zaccaro & Klimoski, 2002). CEO personalities (e.g. conscientiousness, emotional stability, agreeableness, extraversion, openness) can influence top management team dynamics (e.g. concern for legalism, sense of control over the environment, team cohesion, intellectual flexibility, leader dominance, team risk-taking, decentralization of power), in turn organizational performance (Peterson et al., 2003), for instance, a modest CEO is willing to delegate more authority to other executives, which can improve integration within the top management team and further enhance middle managers' positive responses (e.g. affective commitment, job involvement and performance) in the empowering company (Ou et al., 2014). Additionally, the higher social responsibility the leaders have, the more effective the top management teams are (De Hoogh & Den Hartog, 2008).

Leadership styles may also affect decision-making consensus and top management teams' effectiveness. Both of the authoritarian and transactional leaderships have negative impacts on decision-making consensus; laissez faire leadership has a direct negative effect on effectiveness of top management team; while only transformational leadership has a direct positive influence team effectiveness; additionally, the higher the decision-making consensus is, the greater the top management team effectiveness is (Flood et al., 2000). By contrast, empowering leadership is beneficial to the integration and self-efficacy of the top management team, in turn the improvement

of corporate performance (Carmeli, Schaubroeck & Tishler, 2011). Furthermore, shared leadership is associated with cohesion and collective vision, further has an impact on new venture performance (Ensley, Pearson & Pearce, 2003).

Table 6 Leadership

Team processes	Effect	Outcomes	Literature
Powerful CEOs	Positive	Firm performance	Smith et al., 2006
Modest CEOs	Positive	TMT integration Middle managers' responses	Ou et al., 2014
Empowering leadership	Positive	TMT integration Firm performance	Carmeli, Schaubroeck & Tishler, 2011
Leaders' social responsibility	Positive	TMT effectiveness	De Hoogh & Den Hartog, 2008
Leadership style	Significant	Decision-making consensus TMT effectiveness	Flood et al., 2000
Shared leadership	Significant	TMT cohesion New venture performance	Ensley, Pearson & Pearce, 2003
CEO personalities	Significant	TMT dynamics Firm performance	Peterson et al., 2003

4-2. Cohesion

Most of the research on top management team cohesion (refer to Table 7) emphasize on the dimensions of cohesion (Bollen & Hoyle, 1990) and the effects on firm performance (Ensley, Pearson & Amason, 2002; Michalisin, Karau & Tangpong, 2004).

Team cohesion is a result of the combination of individual, organizational, social and situational forces, and enhances members' attraction to the team, in turn inclination to remain in the team (Festinger, 1950; Hogg, 1992). Cohesion can be perceived by every member of the team. Perceived cohesion is team members' evaluation of the relationship between the team and themselves, encompassing a feeling of morale and a sense of belonging to the particular team, and these team members perceiving cohesion show more trust, affection and satisfaction to other members in the team (Bollen & Hoyle, 1990).

From the resource-based view top management team cohesion is, as a strategic asset, a kind of relatively unique and immobile resources, and thus generates superior and sustainable returns (Michalisin, Karau & Tangpong, 2004). Top management teams with higher cohesion have the stable relationship and cooperation among team members, which reduce the waste of resources from various conflicts, in turn increase the firm performance of new ventures (Ensley, Pearson & Amason, 2002). Additionally, the top management teams have higher cohesion in the family-owned corporations than in the nonfamily new ventures (Ensley & Pearson, 2005). However, from the perspective of the group thinking, cohesion causes that individual opinions become a growing convergence with collective opinions and the lack of objective and multi-angle analysis, which are detrimental to decision quality and organizational performance (Janis, 1972, 1982).

Table 7 Cohesion

Team processes	Effect	Outcomes	Literature
Cohesion	Positive	Superior and sustainable returns	Michalisin, Karau & Tangpong, 2004
	Positive	Firm performance	Ensley, Pearson & Amason, 2002
	Negative	Conflicts	Ensley, Pearson & Amason, 2002
Higher cohesion in family firms			Ensley & Pearson, 2005
Cohesion dimensions			Bollen & Hoyle, 1990

4-3. Conflict

Research on top management team conflict (refer to Table 8) mainly focuses on two aspects: impacts of the team conflict on the process of strategic choice (Amason, 1996; Bettenhausen & Murningham 1985; Jehn, 1997; Knight et al., 1999; Schweiger, Sandberg & Ragan, 1986; Schwenk, 1990) and organizational outcomes (Cai, Liu & Yu, 2013; Ensley & Pearce, 2001; Hambrick et al., 2001; Li & Hambrick, 2005; Porter & Lilly, 1996; Qian, Cao & Takeuchi, 2013), and antecedent factors causing team conflict, such as team diversity (Cai, Liu & Yu, 2013; Eisenhardt & Schoonhoven, 1990; Knight et al., 1999; Pelled, 1996), team value (Choi & Cho, 2011; Jehn, 1994), team size (Amason & Sapienza, 1997; Parayitam, Olson & Bao, 2010), past performance (Amason & Mooney, 1999; Peterson & Behfar, 2003), team cohesion (Ensley & Pearce, 2001; Ensley, Pearson & Amason, 2002), and team integration (Camelo-Ordaz, García-Cruz & Sousa-Ginel, 2014).

Different conflict types of top management team have significant influence on strategic decision making and firm performance. Conflict is categorized into two types: cognitive conflict and affective conflict. Cognitive conflict is usually task-oriented and focusing on how to accomplish the goal by means of different ways among team members, on the other hand, affective conflict is relationship or emotion-oriented and caused by interpersonal opposition and disaffection (Amason, 1996; Amason & Sapienza, 1997; Jehn, 1995). The greater affective conflict lowers affective acceptance and decision quality (Amason, 1996), further reduces member satisfaction within the top management team and increase divergence of opinion further influencing strategic consensus negatively (Knight et al., 1999), in turn results in behavioral disintegration (Li & Hambrick, 2005) and an unsatisfactory firm performance (Cai, Liu & Yu, 2013; Ensley & Pearce, 2001; Li & Hambrick, 2005), and hinders corporate innovation (Qian, Cao & Takeuchi, 2013). In contrast, cognitive conflict can motivate team members to generate more different ideas from diverse perspectives (Amason & Schweiger, 1994; Jehn, 1995) and promote understanding and affective acceptance among TMT members (Amason, 1996) in order to establish a platform of sharing and discussing those thoughts, which is conducive to improve the quality of decision making (Schweiger, Sandberg & Ragan, 1986; Schwenk, 1990), therefore, it is positively associated not only with shared strategic cognition (Bettenhausen & Murningham 1985; Jehn, 1997) but also with firm innovation (Qian, Cao & Takeuchi, 2013) and corporate performance such as firm growth, profit, revenues (Cai, Liu & Yu, 2013; Ensley & Pearce, 2001); meanwhile the direct relationship between conflict and team performance is also found in project team (Porter & Lilly, 1996); there is, in addition, another possibility of a curvilinear

relationship between cognitive conflict and firm performance (Hambrick et al., 2001).

Top management team conflicts are likely to be affected by some antecedent factors. Diversity can not only tend to cause individual cognitive differences and the emergence of in-group and out-group (Williams & O'Reilly, 1998), but also lead to a decrease in communication within a team (Smith et al., 1994) and the lack of mutual understanding among team members, in turn increases the likelihood of conflict (Eisenhardt & Schoonhoven, 1990; Knight et al., 1999; Pelled, 1996), for instance, the greater functional diversity a team has, the more frequently the affective conflict within the team happens (Cai,

Table 8 Conflict

Team processes	Effect	Outcomes	Literature
Cognitive conflict	Positive	Understanding Affective acceptance	Amason, 1996
	Positive	Decision quality	Schweiger, Sandberg & Ragan, 1986 Schwenk, 1990
	Positive	Shared strategic cognition	Bettenhausen & Murningham 1985 Jehn, 1997
	Positive	Firm innovation	Qian, Cao & Takeuchi, 2013
	Positive	Firm performance	Cai, Liu & Yu, 2013 Ensley & Pearce, 2001
	Curvilinear	Firm performance	Hambrick et al., 2001
Affective conflict	Positive	Disintegration	Li & Hambrick, 2005
	Negative	Affective acceptance Decision quality	Amason, 1996
	Negative	Strategic consensus	Knight et al., 1999
	Negative	Firm innovation	Qian, Cao & Takeuchi, 2013
	Negative	Firm performance	Cai, Liu & Yu, 2013 Ensley & Pearce, 2001 Li & Hambrick, 2005
Cognitive and affective conflicts can be transformed into each other			Choi & Cho, 2011 Mooney, Holahan & Amason, 2007 Parayitam, Olson & Bao, 2010 Peterson & Behfar, 2003 Simons & Peterson, 2000 Yang & Mossholder, 2004
Antecedents	Effect	Team processes	Literature
Functional diversity	Positive	Affective conflict	Cai, Liu & Yu, 2013 Knight et al., 1999
Value diversity	Positive	Cognitive conflict Affective conflict	Choi & Cho, 2011
Openness	Positive	Cognitive conflict	Amason & Sapienza, 1997
Team size	Positive	Cognitive conflict Affective conflict	Amason & Sapienza, 1997 Parayitam, Olson & Bao, 2010
TMT cohesion	Positive	Cognitive conflict	Ensley & Pearce, 2001
	Negative	Affective conflict	Ensley, Pearson & Amason, 2002
TMT integration	Negative	Affective conflict	Camelo-Ordaz, García-Cruz & Sousa-Ginel, 2014
Past performance	Significant	Cognitive conflict Affective conflict	Amason & Mooney, 1999 Peterson & Behfar, 2003

Liu & Yu, 2013; Knight et al., 1999); additionally, it is demonstrated that there are positive effects of value diversity on both cognitive and affective conflicts in a team (Choi & Cho, 2011), on the contrary, value similarity among team members can reduce conflicts within the team (Jehn, 1994). There are more cognitive and affective conflicts in larger teams than in smaller teams (Amason & Sapienza, 1997; Parayitam, Olson & Bao, 2010), wherein openness has only a positive influence on cognitive conflict (Amason & Sapienza, 1997). Negative feedback on past team performance increases cognitive and affective conflicts within a team (Peterson & Behfar, 2003); meanwhile past performance of organization also has a significantly negative influence on affective conflict, yet it has less impact on cognitive conflict (Amason & Mooney, 1999). Cohesion can increase cognitive conflict while decreasing affective conflict, especially in new ventures' top management teams (Ensley & Pearce, 2001; Ensley, Pearson & Amason, 2002); also, behavioral integration tends to reduce emotional conflict within a top management team (Camelo-Ordaz, García-Cruz & Sousa-Ginel, 2014).

Additionally, cognitive and affective conflicts can be transformed into each other within a top management team (Choi & Cho, 2011; Mooney, Holahan & Amason, 2007; Parayitam, Olson & Bao, 2010; Peterson & Behfar, 2003; Simons & Peterson, 2000; Yang & Mossholder, 2004), for instance, affective conflict will be triggered when cognitive conflict becomes harsher and harsher (Parayitam, Olson & Bao, 2010), trust, however, can decelerate the detrimental transformation, that is to say when there is a high level of trust in a top management team, cognitive conflict will not be transformed into affective conflict (Simons & Peterson, 2000).

4-4. Communication

Communication (refer to Table 9) can promote social interaction and is an important subject on team behavior research. Team members communicate and share information with each other mainly through two essential channels: formal channel (e.g. formal written documents and structured meetings) and informal channel (spontaneous conversations and unstructured meetings) (Smith et al., 1994). Some previous research on communication mostly includes: the effects of different conditions on communication (Amason & Sapienza, 1997; Iaquinto & Fredrickson, 1997; Tjosvold & Deemer, 1980), and the opposite influences of communication on making decision and organizational performance (Iaquinto & Fredrickson, 1997; Smith et al., 1994).

Competitive relationship induces closed-mindedness and insecurity, which not only hinders communication between members but also leads to a difficulty in accepting the other's view and position, in turn failure to come to an agreement; on the other hand cooperative relationship brings openness and positive effect, members, in other words, are willing to communicate and understand each other, which is conducive to reach an agreement (Tjosvold & Deemer, 1980). Team norms can also affect communication and interaction among team members, for instance team members are more willing to express their own opinions on the work and even the concern for others in the circumstances of an open norm (Amason & Sapienza, 1997). Additionally, agreement can not only reduce barriers to communication but also accelerate cooperation, thus leads to an improvement in the quality of team decision making and organizational performance (Iaquinto & Fredrickson, 1997).

However, it is demonstrated that communication frequency has a negative impact on performance outcome. The high frequency of communication shows there is a lot of disagreement and conflict in a team, which causes top management team members have to spend a plenty of time and effort in coordinating relationships and reaching a consensus rather than completing a given work, in turn, negatively influence performance outcome; in contrast, a small amount of communication is likely to indicate that the team is working well and the performance is satisfactory (Smith et al., 1994).

Table 9 Communication

Team processes	Effect	Outcomes	Literature
Communication	Negative	Performance	Smith et al., 1994
Antecedents	Effect	Team processes	Literature
Competitive relationship	Negative	Communication	Tjosvold & Deemer, 1980
Open team norm	Positive		Amason & Sapienza, 1997
Agreement	Positive		Iaquinto & Fredrickson, 1997

4-5. Integration

Team integration (refer to Table 10) is a kind of collective interaction in thinking and action among top management team members, including the quantity and quality of information exchange, cooperative behavior and joint decision making (Hambrick, 1994). The recent research on top management team integration mostly encompasses two aspects: antecedent determinants of behavioral integration (Carmeli, Schaubroeck & Tishler, 2011; Hambrick et al., 2001; Li & Hambrick, 2005; Ou et al., 2014; Simsek et al., 2005) and effects of team integration on organizational outcome (Carmeli & Schaubroeck, 2006; Carmeli, Schaubroeck & Tishler, 2011; Chen, Lin & Michel, 2010; Hambrick, 1997; Hambrick et al., 2001; Li & Hambrick, 2005; Lubatkin et al., 2006; Ou et al., 2014; Raes, Bruch & De Jong, 2013).

Team integration is usually affected by three levels of antecedent determinants originating from CEO, team and firm. In CEO level, CEO empowering leadership (Carmeli, Schaubroeck & Tishler, 2011; Ou et al., 2014), tenure and collectivistic orientation are positively related to team integration; in team level, team's size, goal preference diversity and top management team diversity are, particularly functional diversity, negatively associated with behavioral integration; in firm level, corporate performance has a positive impact on team integration while firm size negatively influences behavioral integration (Simsek et al., 2005). In addition, affective conflict has also a positive effect on behavioral disintegration, yet there is less effect of cognitive conflict on behavioral disintegration (Li & Hambrick, 2005) and the reason is likely to be that there is a curvilinear relationship between cognitive conflict and behavioral disintegration (Hambrick et al., 2001).

Behavior integration can help top management team improve quality of corporate strategy decision making, to further retards organizational decline (Carmeli & Schaubroeck, 2006; Hambrick, 1997); in contrast, the higher the level of team behavioral disintegration is, the more ineffective the firm performs (Hambrick et al., 2001; Li & Hambrick, 2005), in other words, TMT integration can improve

team efficacy, in turn corporate performance (Carmeli, Schaubroeck & Tishler, 2011); furthermore, team integration positively affects productive energy (e.g. cognition, emotion and behavior) within the company and job engagement and satisfaction among employees (Ou et al., 2014; Raes, Bruch & De Jong, 2013). Additionally, it is likely that there is an intermediary (e.g. action aggressiveness, ambidextrous orientation) between behavioral integration within top management team and firm performance (Chen, Lin & Michel, 2010; Lubatkin et al., 2006). However, it is confirmed that in the high level of team integration, the top management team heterogeneity (e.g. age, tenure, function) has a negative impact on firm innovation (Wei & Lau, 2012).

Table 10 Integration

Team processes	Effect	Outcomes	Literature
TMT integration	Positive	Productive energy	Ou et al., 2014 Raes, Bruch & De Jong, 2013
	Positive	Firm performance	Carmeli & Schaubroeck, 2006 Carmeli, Schaubroeck & Tishler, 2011
	Negative	Firm performance	Hambrick et al., 2001 Li & Hambrick, 2005
	Negatively moderating	Between TMT heterogeneity and firm innovation	Wei & Lau, 2012
An intermediary between TMT integration and firm performance			Chen, Lin & Michel, 2010 Lubatkin et al., 2006
Antecedents	Effect	Team processes	Literature
CEO empowering leadership	Positive	Team integration	Carmeli, Schaubroeck & Tishler, 2011 Ou et al., 2014
Firm performance	Positive	Team integration	Simsek et al., 2005
TMT functional diversity	Negative		
Affective conflict	Positive	Disintegration	Li & Hambrick, 2005
Cognitive conflict	No		
Cognitive conflict	Curvilinear	Disintegration	Hambrick et al., 2001

5. Environmental influences

Top management teams are often affected by external environments, mainly including national, industrial and organizational environments. The environmental influence can not only directly act upon top management team composition and processes (Eisenhardt & Schoonhoven, 1990; Finkelstein & Hambrick, 1990; Geletkanycz, 1997; Glunk, Heijltjes & Olie, 2001; Hambrick, 1981; Palmer & Varner, 2007), but also moderate the relationships among top management team characteristics, team processes and organizational outcomes (Carpenter, 2002; Hmieleski & Ensley, 2007; Huffman & Hegarty, 1993; Keck, 1997; Nielsen B B & Nielsen S, 2013; Srivastava & Lee, 2005; Wei et al., 2005; Wiersema & Bird, 1993).

5-1. National environment

National environment (refer to Table 11) cannot influence the top management team composition and processes (Geletkanycz, 1997; Glunk, Heijltjes & Olie, 2001; Palmer & Varner, 2007), but also moderates the relationship between TMT characteristics and organization outcomes (Huffman & Hegarty, 1993; Wei et al., 2005; Wiersema & Bird, 1993).

Plenty of hypotheses on top management teams are much more effective in some societies or nations than in others, for instance chief executive officers tend to have more autonomy in American corporations than in other developed countries, which makes it easier to be found that samples from American companies show more significant impacts of top management team characteristics and processes on firm performance than those from others (Hambrick, 2007). In contrast with above opinion, senior managers do not perform best in top management teams on account of the prevalence of individualism in the United States, which causes that many top management teams from American firms cannot meet criteria of the real team and are only some work groups (Katzenbach, 1997).

Many of the studies on top management teams focus on American companies, yet there is much difference in composition, characteristics and leadership style of top management teams among different nations (Glunk, Heijltjes & Olie, 2001; Palmer & Varner, 2007). In a comparative study on multinational corporations from the Europe, America and Asia, it is found that top management teams in European companies have more members with international experience than these teams from American firms; the boards of directors in Asian corporations have more members who are eligible for internationalization, while in American and European firms the more executives qualify for internationalization (Palmer & Varner, 2007). Comparing some companies from three different countries, the research indicates that average age of top management team in The Netherlands is higher and tenure is longer than in both Great Britain and Denmark; although almost half of top managers have educational background in business or economics in all three countries, executives with a degree in engineering or law are most in corporations from The Netherlands; most of the top managers are female in Great Britain and Denmark, in contrast there is no female executive in The Netherlands; additionally the dominant leadership style in firms from Great Britain is quite different from Denmark and The Netherlands, for example main leadership style is masculine based on independence in Great Britain while feminine based on cooperation in both Denmark and The Netherlands (Glunk, Heijltjes & Olie, 2001).

There is great limitation to discuss top managers' leadership behavior and performance without consideration of national or cultural background, for instance tenure has little effect on top manager commitment under the circumstance of controlled cultural values, although some of the studies find that tenure positively affects strategy commitment; furthermore, culture significantly influences mindsets of top managers, in turn leadership and strategy change (Geletkanycz, 1997). Under different circumstances of four western cultures (e.g. Anglo, European Latin, Germanic, Nordic), top managers' characteristics have different effects on innovation encompassing administrative and product/market innovation (Huffman & Hegarty, 1993). In addition, there is also a national and cultural moderation between top management team characteristics and organizational outcomes, for instance compared

with American corporations, heterogeneities of top management team characteristics are not only more significantly associated with team turnover in Japanese companies (Wiersema & Bird, 1993), but also appear to exert more detrimental effects on firm performance in China (Wei et al., 2005).

Table 11 National environment

Findings	Literature
Different TMT composition in different nations	Glunk, Heijltjes & Olie, 2001 Palmer & Varner, 2007
Culture influences leadership and strategic change	Geletkanycz, 1997
Top managers' characteristics have different effects on innovation in different cultures	Huffman & Hegarty, 1993
Heterogenous TMTs have higher team turnover in Japanese firms	Wiersema & Bird, 1993
TMT heterogeneity has more detrimental effects on firm performance in China	Wei et al., 2005

5-2. Industrial environment

Different industrial environment (refer to Table 12) can not only have direct impacts on the top management team composition (Eisenhardt & Schoonhoven, 1990) and team processes (Finkelstein & Hambrick, 1990; Hambrick, 1981) in companies, but also moderate the relationships among top management team characteristics, team processes and corporate outcomes both in strategy and performance (Hmieleski & Ensley, 2007; Keck, 1997; Murray, 1989; Srivastava & Lee, 2005).

In turbulent industries such as semiconductors and minicomputers, some experienced top managers are more helpful than specialized technicians in a top management team to companies (Eisenhardt & Schoonhoven, 1990), and top management teams with short tenure and high heterogeneity are more beneficial to strategic process and further to firm performance on the account of capabilities to solve the complex problems from new insights and diverse perspectives, while top management teams with longer tenure and higher homogeneity are more conducive to team cohesion and in turn corporate performance in a stable industry, for example cement industry (Keck, 1997). Furthermore, it is verified that there are different effects of top management team tenure and heterogeneity on corporate entrepreneurial actions, especially new product moves, long-tenured top management teams, specially speaking, perform better on new product introduction in such industries as brewing and long distance telecommunication; in contrast, short-tenured teams are more willing to engage in entrepreneurial activities in personal computer industry; additionally, TMT tenure heterogeneity is significantly and negatively associated with corporate entrepreneurship in brewing industry (Srivastava & Lee, 2005). However, there is a opposite founding in the computer industry, top management teams have higher level of discretion than those in both the natural gas and chemical industries, and team tenure is more positively associated with strategic persistence and organizational outcomes (Finkelstein & Hambrick, 1990); additionally, strategic conformity has a more significant and positive influence on corporate performance in an uncertain computer industry than in a stable foods industry (Geletkanycz & Hambrick, 1997).

In American stable industries, when a young corporation is managed by an empowering CEO,

the top management team heterogeneity (e.g. educational and functional background) positively influences firm performance, whereas, the young company with a high-homogeneity top management team performs better, when operated by a directive CEO; on the other hand, in American dynamic industries, the greater heterogeneity the top management team with a directive CEO has, the better the young company performs, in contrast, the greater homogeneity the top management team with an empowering CEO has, the better the firm performance is (Hmieleski & Ensley, 2007). Furthermore, it is confirmed that top management team characteristics are more significantly associated with corporate performance in the oil industry than in the food industry (Murray, 1989). In addition, there is a big difference from the United States, under the circumstance of Taiwan's hypercompetitive industries, the higher level of behavioral integration the top management team has, the more aggressive the corporate action is, the better the firm performs (Chen, Lin & Michel, 2010).

Additionally, in different industries there is relatively different power structure within top management teams. In an innovative industry (e.g. insurance), team members with particular functional background such as product and marketing development are more powerful than others within the team; In a highly efficient industry such as hospital, team members with financial and operational functions have most power in the top management team (Hambrick, 1981).

Table 12 Industrial environment

Findings	Literature
In a turbulent industry some experienced top managers are more helpful than specialized technicians	Eisenhardt & Schoonhoven, 1990
Different team power structure in different industries	Hambrick, 1981
TMT characteristics are more significantly associated with firm performance in the oil industry than in the food industry	Murray, 1989
TMTs have higher level of discretion in the computer industry than those in both the natural gas and chemical industries	Finkelstein & Hambrick, 1990
In stable industries heterogenous TMTs with an empowering CEO perform well in firms, in dynamic industries heterogenous TMTs with a directive CEO perform well in firms	Hmieleski & Ensley, 2007
TMT tenure has opposing effects on corporate entrepreneurship in different industry, TMT tenure heterogeneity negatively affects corporate entrepreneurship in brewing industry	Srivastava & Lee, 2005
TMTs with long tenure and high homogeneity are more beneficial to firm performance in a stable industry	Keck, 1997

5-3. Organizational environment

In an international and uncertain organizational environment (refer to Table 13), top management team characteristics, specifically heterogeneities, are likely to have opposite effects on corporate strategy and performance (Cannella, Park & Lee, 2008; Carpenter, 2002; Nielsen B B & Nielsen S, 2013).

Heterogeneous top management teams perform better in a complex environment than in a certain environment, since it is necessary for companies to gather and deal with a great deal of information

under these circumstances, and top management teams with diverse members can obtain more information and abilities to solve such complicated problems, which is beneficial to select the most appropriate strategy through evaluating a number of alternative strategies (Hambrick & Mason, 1984; Priem, 1990; Priem, Harrison & Muir, 1995) and further improve organizational performance (Cannella, Park & Lee, 2008; Nielsen B B & Nielsen S, 2013). For instance, TMT functional heterogeneity facilitates firm performance in an uncertain environment (Cannella, Park & Lee, 2008), and educational heterogeneity (Carpenter, 2002) and nationality heterogeneity are also found to have positive impacts on corporate performance in the higher level of international environment (Nielsen B B & Nielsen S, 2013). Besides, the more international experience the top management teams have, the better the companies perform in high internationalization (Nielsen B B & Nielsen S, 2013).

On the other hand, under the circumstances of internationalization, the complex organizational environment tends to undermine the positive effects of top management team heterogeneities on corporate outcome (Carpenter, 2002), since TMT heterogeneities are not only likely to trigger affective conflict (Amason & Sapienza, 1997; Williams & O'Reilly, 1998), but also retard team integration (O'Reilly, Snyder & Boothe, 1993) and behavioral execution (Hambrick, Cho & Chen, 1996), in turn negatively affect firm performance, for example in the high internationalization, both functional and tenure heterogeneities of top management teams are negatively associated with corporate performance (Carpenter, 2002).

Additionally, there are noteworthy relationships between some of the top management team characteristics and organizational internationalization (Amason & Sapienza, 1997; Chen, 2011; Herrmann & Datta, 2005; Reuber & Fischer, 1997; Sambharya, 1996; Segaro, 2012; Tihanyi et al., 2000). As companies become plunged into international business, top management teams need more executives who have the ability of international operation in order to share and communicate international experience and knowledge with each other (Amason & Sapienza, 1997), and the chief executive officers with international experience often perform better in highly multinational corporations (Carpenter, Sanders & Gregersen, 2001). Consistent with this, the greater international experience the top management teams have, the more likely the firms are to be engaged in international cooperation and strategies (Chen, 2011; Herrmann & Datta, 2005; Reuber & Fischer, 1997; Sambharya, 1996; Segaro, 2012; Tihanyi et al., 2000), furthermore, TMT age, educational background, tenure and heterogeneity are also significantly related to corporate internationalization (Chen, 2011; Herrmann & Datta, 2005; Sambharya, 1996; Tihanyi et al., 2000). Through research on Chinese companies and emerging markets, the findings show that there is the positive relationship between domestic diversification (e.g. industry and region) and corporate internationalization, international experience of top management team, besides, enhances the relationship, while TMT political connections tend to undermine the positive relationship (Lu et al., 2014).

Table 13 Organizational environment

Findings	Literature
In an uncertain environment, TMT functional heterogeneity facilitates firm performance	Cannella, Park & Lee, 2008
In the high internationalization, TMT functional and tenure heterogeneities negatively affect firm performance, yet educational heterogeneity has a positive influence	Carpenter, 2002
In the high internationalization, TMT nationality heterogeneity positively influences firm performance, TMTs with more international experience perform better	Nielsen B B & Nielsen S, 2013
CEOs with international experience perform better in highly multinational corporations	Carpenter, Sanders & Gregersen, 2001
TMTs with more international experience are more likely to engage in international cooperation and strategies	Chen, 2011 Herrmann & Datta, 2005 Reuber & Fischer, 1997 Sambharya, 1996 Segaro, 2012 Tihanyi et al., 2000
TMT heterogeneities significantly affect corporate internationalization	Chen, 2011 Herrmann & Datta, 2005 Sambharya, 1996 Tihanyi et al., 2000
Corporate domestic diversification facilitates internationalization	Lu et al., 2014

6. Summary

This review paper summarizes and analyzes the upper echelons theory development, the impacts of top management team characteristics on strategic choices and organizational performance, team processes and environmental influences. Based on the above comprehensive review of the previous studies on top management teams, especially the review of empirical research, a circle model is built to explain the possible relationships among these variables.

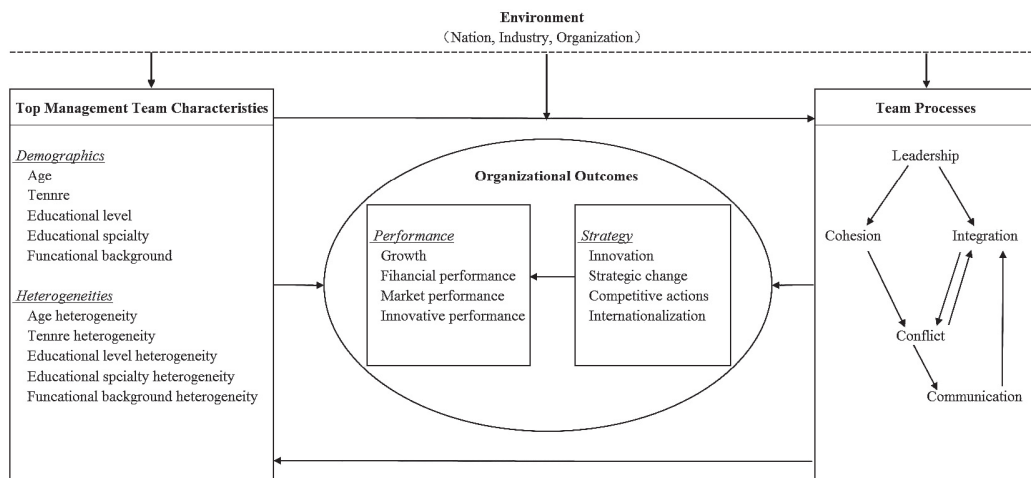


Figure 2: A circle model of top management teams

As shown in the figure 2, a circle appears between the top management team characteristics and team processes, more specially, the top management team demographics and heterogeneities have impacts on team processes (Eisenhardt & Schoonhoven, 1990; Knight et al., 1999; Pelled, 1996; Simsek et al., 2005; Smith et al., 1994), and conversely team processes also affects the top management team composition (Ensley, Pearson & Amason, 2002; Finkelstein, 1992).

On the one hand, the top management team characteristics exert direct effects on organizational outcomes (Bantel & Jackson, 1989; Flood et al., 1997; Herrmann & Datta, 2005; Lee & Park, 2006; Liu et al., 2012; Tihanyi et al., 2000; Wei et al., 2005; Wiersema & Bantel, 1992); on the other hand, TMT demographics and heterogeneities are more likely to indirectly influence organizational strategy and performance through affecting the team processes (Carmeli & Schaubroeck, 2006; Carmeli, Schaubroeck & Tishler, 2011; Hambrick, 1997; Lubatkin et al., 2006; Ou et al., 2014; Raes, Bruch & De Jong, 2013; Simsek et al., 2005; Smith et al., 1994; Smith et al., 2006).

Moreover, there are some noteworthy relationships between these team process factors, and specially, leadership has impacts on team cohesion and integration (Carmeli, Schaubroeck & Tishler, 2011; Ensley, Pearson & Pearce, 2003; Ou et al., 2014; Peterson et al., 2003; Zaccaro & Klimoski, 2002); team cohesion can also exert effects on conflicts within the team (Ensley, Pearson & Amason, 2002); conflict among TMT members affects integration and communication within the team (Hambrick et al., 2001; Li & Hambrick, 2005; Smith et al., 1994); team integration affects conflicts (Camelo-Ordaz, García-Cruz & Sousa-Ginel, 2014; Hambrick et al., 2001); communication among team members has an influence on team integration (Smith et al., 1994).

In addition, external environments such as nation, industry and organization can not only directly affect top management team composition (Eisenhardt & Schoonhoven, 1990; Glunk, Heijltjes & Olie, 2001; Palmer & Varner, 2007) and team processes (Finkelstein & Hambrick, 1990; Geletkanycz, 1997; Hambrick, 1981), but also as a moderator, exert impacts on the relationships among top management team characteristics, team processes and organizational outcomes (Carpenter, 2002; Hmieleski & Ensley, 2007; Huffman & Hegarty, 1993; Keck, 1997; Nielsen B B & Nielsen S, 2013; Srivastava & Lee, 2005; Wei et al., 2005; Wiersema & Bird, 1993).

7. Future research direction

First, there is a shift in the emphasis of the research on top management teams from TMT demographics (e.g. age, education) to TMT heterogeneities (e.g. functional heterogeneity) and team processes (e.g. team integration) in order to open the “black box” existing in the original upper echelons theory, and thus it is needed to introduce such characteristics or variables as faultlines (Hutzschenreuter & Horstkotte, 2013b; Van Knippenberg et al., 2011), female top managers (Dezső & Ross, 2012), middle managers (Ou et al., 2014; Raes et al., 2011) into the upper echelons theory to better explain how top management teams affect organizational outcomes.

Second, many of the studies on top management teams focus on the western countries with mature market economies, and hence in future research, if scholars interested in upper echelons pay more attention to Asian nations, especially in emerging market economies, there may be some different

research results and original research findings.

Third, a case or field study will be considered in future research on top management teams, since it has more practical and operational values to managers, and there is a paucity of literature on it in the field of upper echelons (Pitcher & Smith, 2001).

Finally, most of the upper echelons research is mostly concentrated in corporate strategic development and performance improvement, and the study on corporate social responsibility is scarce. However, it makes sense to clarify the relationship between top management teams and corporate philanthropy, especially in China, because unlike western countries, most of the charitable give originates in companies rather than individual donors.

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